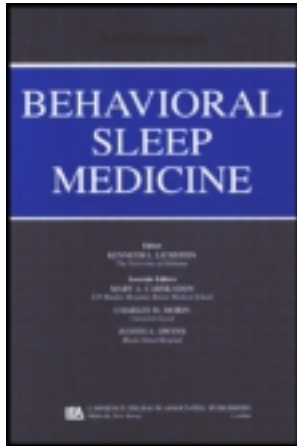


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### Clinical Management of Insomnia with Brief Behavioral Treatment (BBTI)

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## IN THE CLINIC: A TREATMENT MANUAL SERIES

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# Clinical Management of Insomnia with Brief Behavioral Treatment (BBTI)

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Insomnia is a highly prevalent and debilitating sleep disorder. It is well documented that psychological treatments, including *cognitive-behavioral therapy for insomnia* (CBTI), are efficacious treatments, with effect sizes of comparable magnitude to that of pharmacologic treatment. However, a critical shortage of specialty-trained clinicians with experience in sleep medicine and cognitive-behavioral therapy principles has limited the widespread dissemination of CBTI. A brief (four sessions; two of which may be phone sessions) treatment, titled “Brief Behavioral Treatment for Insomnia” (BBTI), was developed to address many of the barriers to widespread dissemination associated with standard CBTI. Specifically, BBTI has an explicit behavioral focus, is overtly linked to a physiological model of sleep regulation, and utilizes a hardcopy workbook that facilitates its concise delivery format and ease of training clinicians. BBTI has demonstrated efficacy in treating older adults with insomnia (Buysse et al., 2011). This article describes the rationale for the development of BBTI, provides a session-by-session guide to the delivery of the treatment, and concludes with a discussion of contraindications, combined pharmacotherapy treatment, and future directions for the use of BBTI in diverse populations and utilizing different modalities of delivery.

Insomnia is the most common sleep disorder, with prevalence estimates ranging from 10% to 15% in the general population (Ohayon & Guilleminault, 1999) and up to 20% to 30%

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in primary care medical settings (Shochat, Umphress, Israel, & Ancoli-Israel, 1999). Robust evidence demonstrates the significant health and functional consequences of insomnia, including reduced quality of life and increased health care utilization, health care costs, disability, and risk for psychiatric disorders and cardiovascular disease (Daley, Morin, LeBlanc, Gregoire, & Savard, 2009; Drake, Roehrs, & Roth, 2003; Roth, Franklin, & Bramley, 2007).

Psychological treatments for insomnia, including multi-component *cognitive-behavioral therapy for insomnia* (CBTI), utilize techniques such as sleep education, sleep restriction, stimulus control, and addressing anxiety-provoking beliefs about sleep (Edinger & Carney, 2008; Morin, 2004). Evidence suggests that these treatments are preferred by patients (as compared to pharmacotherapy) and have consistent, strong, short- and long-term efficacy (Irwin, Cole, & Nicassio, 2006; Morin et al., 2006). However, the widespread dissemination of CBTI has been limited by a critical shortage of specialty-trained clinical psychologists (Morin, 2010), as well as the duration and intensity of initial treatment (typically delivered over 6–8 sessions). In addition, most efficacy trials have focused on patients with primary insomnia, which excludes the larger group of patients with significant medical and psychiatric comorbidities (Ford & Kamerow, 1989). This latter group is disproportionately represented in general medical settings and among older adults. Moreover, these populations may face specific challenges that may limit their willingness or availability to attend six to eight treatment sessions.

With these specific caveats in mind, our laboratory developed a brief, manualized, behavioral treatment program appropriately titled, “Brief Behavioral Treatment for Insomnia” (BBTI), to test a model for disseminating behavioral treatment for insomnia in primary care practices (Buysse et al., 2011; Germain et al., 2006). Treatment development was guided by the premise that for a behavioral treatment to be relevant in the general medical settings, it must be (a) brief, (b) acceptable to patients, (c) deliverable by a nurse or paraprofessional without a large amount of specialty training, and (d) efficacious over a short time interval. A further assumption is that, in primary care settings, the lack of a robust initial response is likely to be followed by prescription of medication or referral for more specialized care.

BBTI is based on the core principles that are fundamental to other empirically supported behavioral treatments of insomnia, including CBTI, abbreviated CBTI (Edinger & Sampson, 2003), CBTI delivered by nurse practitioners, and self-help books for insomnia (Espie et al., 2007; Glovinsky & Spielman, 1991; Hauri, 1993). However, it has some particular features that were designed to facilitate its delivery in a very concise format and, perhaps, its applicability in primary care or other community health settings (although this remains to be tested). First, it has an explicit behavioral focus, which may avoid some of the perceived stigma associated with “psychological” treatments in medical settings, particularly those delivered over six to eight sessions. Second, it is overtly linked to a physiological model of sleep regulation (Borbely & Achermann, 2000), which provides a coherent and compelling rationale for both patients and physicians. Third, it provides patients with a hardcopy workbook including the treatment rationale and specific written prescriptions for sleep behaviors. The provision of the hardcopy workbook provides further tangible reinforcement to the patient regarding the strict behavioral focus of the treatment, and facilitates the relatively rapid training time for health care professionals with varying degrees of previous sleep medicine or behavioral intervention experience. As described in detail later, the workbook contains information on sleep hygiene practices, a description of the physiological controls of sleep (see Figure 1), a description and rationale for the “four rules for better sleep,” and workbook pages for the patient and

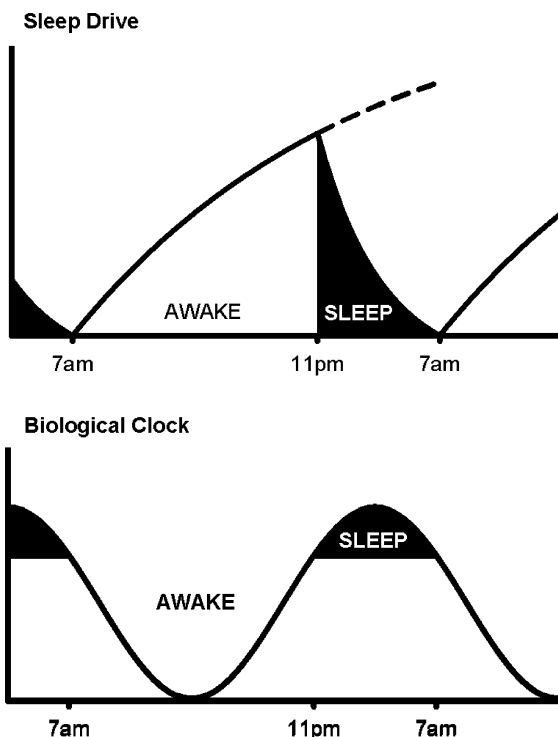


FIGURE 1 Heuristic model of sleep regulatory controls used to explain the rationale for specific treatment recommendations.

therapist to fill out in session concerning the patient's current and prescribed sleep schedules. The workbook is available from us upon request.

We have recently reported the short-term efficacy results for BBTI in a population of 82 older adults with chronic insomnia, the majority of whom would be characterized as having comorbid insomnia (Buysse et al., 2011; Germain et al., 2006). In brief, insomnia patients were randomized to either the BBTI condition or an information control (IC) condition. For participants randomized to the BBTI condition, treatment was delivered over a 4-week period with two in-person sessions and two brief telephone contacts (described in detail later). Participants randomized to the IC condition received three brochures published by the American Academy of Sleep Medicine on insomnia, sleep and aging, and sleep hygiene. They received a follow-up telephone call two weeks later to answer questions that may have arisen regarding the written material. Both BBTI and IC control conditions were delivered by a master's level mental health nurse practitioner who had no prior experience in sleep medicine or behavioral interventions for insomnia. As compared to the IC condition, patients randomized to BBTI had significantly improved self-reported sleep and actigraphy-assessed sleep outcomes, had higher rates of categorically defined treatment response (defined as a change in the Pittsburgh Sleep Quality Index [PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989] score of  $\geq 3$  points

or change in the sleep diary sleep efficiency [SE] of  $\geq +10\%$ ), and were less likely to have an insomnia diagnosis at a 1-month follow up (Buysse et al., 2011). In addition, among 25 patients who showed a favorable acute treatment response, 64% no longer met insomnia criteria at a 6-month follow-up.

The purpose of this article is to review the rationale for BBTI, the structure and content of BBTI sessions, and to provide specific practical clinical recommendations for the delivery of BBTI beyond the research setting. To that end, we incorporate both a summary description of each session, as well as verbatim “scripts” to further delineate the delivery of the treatment.

## CLINICAL PROCEDURES

### BBTI Rationale

The basic rationale for BBTI is that by modifying waking behaviors we can have a direct impact on the two major physiological systems that regulate sleep: the homeostatic and circadian drives (see Figure 1). Focusing on the model presented in Figure 1 provides a useful heuristic for explaining the treatment rationale to patients and to new therapists. The homeostatic sleep drive refers to the increased propensity for sleep with increasing duration of wakefulness. The circadian drive refers to the variations in brain and biological processes that are regulated by the central pacemaker, the “biological clock.” The circadian drive promotes or inhibits the propensity to remain alert or to fall or stay asleep throughout the 24-hr cycle. When individuals sleep at a suboptimal circadian time, as is the case with circadian sleep disorders, shift work, or jet lag, sleep is perceived to be of poorer quality, lighter, and more fragmented. Similarly, when individuals try to sleep at a time when their bodies have not accumulated sufficient “sleep drive,” sleep is also compromised. The rationale behind BBTI is that insomnia is often characterized by sleep-related behaviors that interfere with or inhibit normal homeostatic and circadian processes. Thus, the treatment involves modifying waking behaviors to increase and regulate the duration of wakefulness, thereby increasing the homeostatic sleep drive, and identifying an individualized prescription for sleep and wake time that optimizes and reinforces the circadian drive for sleep, by providing consistent entraining cues (Mistlberger & Skene, 2004). Optimizing these processes facilitates sleep onset, enhances sleep consolidation, promotes restorative sleep, and improves daytime alertness.

The core components of BBTI are the principles of stimulus control (Bootzin, Epstein, & Wood, 1991) and sleep restriction (Spielman, Saskin, & Thorpy, 1987), as there is strong empirical support for these behavioral interventions for primary insomnia and comorbid insomnia (Morgenthaler et al., 2006; Smith et al., 2002).

### Treatment Structure

BBTI is a manualized intervention designed to be delivered over four consecutive weeks. To maximize tolerability for patients and potential for dissemination, the intervention involves two in-person sessions (Sessions 1 & 3) and two telephone “booster” sessions on Weeks 2 and 4. Prior to initiating treatment, all patients undergo a thorough sleep evaluation and complete standard sleep and daytime sleepiness questionnaires (e.g., PSQI: Buysse et al., 1989; and

the Epworth Sleepiness Scale: Johns, 1991), an insomnia rating scale (e.g., Insomnia Severity Index [ISI]: Bastien, Vallieres, & Morin, 2001), a depressive symptom checklist (e.g., Radloff, 1977), and 2 weeks of sleep diaries (Monk et al., 1994). Data gathered from sleep diaries are then used to personalize treatment recommendations for individual patients.

The first treatment session is typically the longest in duration, lasting 45 to 75 min. Session 3, the follow-up in-person session, lasts approximately 30 min and is used to review sleep diaries, modify the sleep prescription as necessary, and discuss problems/challenges that may have arisen in the previous week. The phone sessions (Sessions 2 & 4) are designed to be brief (< 20 min) sessions to address questions or difficulties that may have arisen in the previous week, to encourage adherence to the prescribed sleep schedule, or to titrate the prescribed sleep schedule if necessary.

## Session Content

### *Session 1*

The first session aims at providing accurate and concise background information about healthy sleep practices (sleep hygiene recommendations) and mechanisms of sleep regulation, which serve as the rationale for the recommended behavioral interventions. The session is designed to be both educational and interactive. Toward that end, we use a very simple workbook that the therapist works through with the patient in session. The workbook begins with a brief review of behaviors that “hurt” or “help” sleep. We find that this brief review of sleep hygiene behaviors is useful not only for identifying poor sleep hygiene behaviors (e.g., sleeping with a pet), but also helps to distinguish between what sleep hygiene is versus the other “active” components of the treatment (i.e., sleep restriction and stimulus control instructions).

Next, the workbook is used to guide the discussion to an explanation of the processes that control sleep based on Borbely’s (1982) “Two Process” model of sleep regulation (see Figure 1). This discussion forms the rationale for specific treatment recommendations. To provide a more practical guide, we provide a typical therapist “script”:

Therapist: There are 2 basic processes that control sleep. The first process is our “sleep drive.”

You can think of the sleep drive as a rubber band—the longer you’ve been awake, the more stretched the band becomes. By the end of the day, provided that you’ve been awake the whole time, that rubber band should be really tight, such that when your head hits the pillow you are able to fall asleep deeply and quickly. It’s like the rubber band snapping back. Does this make sense?

Client: Yes.

Therapist: So what do you think happens to that sleep drive when you nap?

Client: It’s not as strong.

Therapist: Exactly! Instead of having a very taut rubber band, the rubber band may actually be kind of loose and floppy when you try to go to sleep, leading to difficulty falling asleep and/or poor quality sleep. On the other hand, staying up longer would do what to the rubber band?

Client: Stretch it tighter?

Therapist: Correct, and tighter stretch means that your “sleep snaps back” quickly and deeply. Now, if the sleep drive were the only factor regulating our ability to sleep then this

would mean that as long as you stayed awake long enough, you could fall asleep equally well at let's say 11:00 in the morning, as you could at 11:00 at night. Have you ever tried this, for instance after pulling an all-nighter or flying to a different time zone?

Client: Definitely. You don't sleep as well during the day.

Therapist: That's right and the reason is that there is a second factor that regulates our sleep—our body's internal biological clock or circadian rhythm. This process controls the timing of when we are likely to sleep optimally and function at our best during the day. Our biological clocks are “set” to promote sleep at night and wakefulness during the day. As you can see from this picture (referring to Figure 1), ideally, these two forces that regulate our sleep work together. At the end of the day, based on how long we've been awake, our sleep drive is high, which helps us to fall asleep deeply and quickly. Later in the night, our biological clock's sleep drive reaches a peak, helping us to stay asleep. With insomnia, however, you may not be taking full advantage of these two natural processes. In fact, you may actually be engaging in sleep-related behaviors that work AGAINST them. The good news is there are things you can do to strengthen each of these processes in order to get better sleep, and that's exactly what this treatment is designed to do. Make sense?

After discussing the treatment rationale, the therapist uses the patient's sleep diaries and works collaboratively with the patient to calculate average sleep parameters in the past 2 weeks (i.e., bedtime, wake time, sleep latency, wakefulness after sleep onset, total time in bed, and total sleep time) and writes these values in the patient's workbook. This collaborative observation and recording of sleep patterns generally takes about 10 min and often provides an “A-ha” moment to gain insight into potential sleep-interfering behaviors (e.g., “Oh my gosh, I had no idea I was in bed for 10 hours but only sleeping for 4 hours!”).

Next, the therapist guides the patient through the four “rules” to improve sleep (see Table 1). The rules are individually presented and specifically discussed as they relate to either or both of the processes that control sleep.

*Rule 1: Reduce your time in bed.* Helping the patient to “buy in” to the concept of restricting time in bed is absolutely critical for the treatment's success. This largely rests on the patient having a solid understanding of the processes that control sleep, as well as on the therapist's careful explanation of what the recommendation actually entails. Sleep restriction aims at limiting the number of hours in bed to match the actual number of hours spent asleep + 30 min, to account for normal time to fall asleep and nocturnal awakenings. The therapist may begin by acknowledging that, although the recommendation may actually sound counterintuitive, it actually makes sense in relation to the homeostatic sleep drive. Using the patient's sleep diary data to remind the patient of the amount of time he or she is currently spending in bed relative to the amount of time he or she is actually sleeping is critical for personalizing the recommendation and for enhancing patient acceptance of the recommendation. For safety reasons, in our laboratory and clinic, we typically set the minimum number of hours in bed to 6 hr, even if the patient reports sleeping < 6 hr.

*Rule 2: Wake up at the same time of day every day, no matter how poorly you slept the night before.* Patient's sleep diaries often reveal great inconsistency regarding nightly

TABLE 1  
Common Obstacles and Approaches to Resistance to the Four “Rules” for Better Sleep

| <i>Rule</i>  | <i>Common Obstacles and Approaches to Resistance</i>   |
|--|--|
| 1. Reduce your time in bed   | <p>“But I came in here to get more sleep and you are telling me to sleep less!”</p> <ul style="list-style-type: none"> <li>• Utilize sleep diaries to emphasize that “I am not cutting down on your actual sleep, I’m just going to cut down on the time you are AWAKE in bed.”</li> <li>• Acknowledge that daytime sleepiness is a likely potential side effect, but remind the patient that side effects are generally transient and will improve as sleep improves.</li> </ul>  |
| 2. Get up at the same time of day every day of the week, no matter how poorly you slept the night before | <p>“If I actually get a good night sleep and am able to sleep in, I’m not going to force myself to get up!”</p> <ul style="list-style-type: none"> <li>• Utilize sleep diaries to show how “sleeping in” can lead to greater difficulty falling asleep the next night, due to reduced sleep drive.</li> </ul> <p>“I don’t need an alarm clock to get up in the morning. I’m always awake anyways.”</p> <ul style="list-style-type: none"> <li>• Remind patient that that, although that may be true in the past, the treatment is designed to increase sleep drive, so “you may actually find that you are going to need an alarm clock to wake up. Wouldn’t that be a sign of progress?”</li> </ul> |
| 3. Do not go to bed unless you are sleepy  | <p>“If I wait to go to bed until I’m actually sleepy, what am I supposed to do to fill the extra time?”</p> <ul style="list-style-type: none"> <li>• Brainstorm with patient possible evening activities (e.g., with a focus on “things you always wanted to do but never have the time to do”).</li> </ul> <p>“What if I don’t get sleepy?”</p> <ul style="list-style-type: none"> <li>• Remind the patient that “by following all four rules for better sleep, we are directly targeting your body’s sleep drive, and so you are very likely going to feel sleepy at your new bedtime or soon thereafter.”</li> </ul>  |
| 4. Do not stay in bed unless you are asleep  | <p>“What am I going to do at 2:00 in the morning?”</p> <ul style="list-style-type: none"> <li>• Plan activities in advance.</li> <li>• Identify at least one, but preferably two, relatively non-stimulating, but distracting, activities to engage in if not sleeping.</li> </ul> <p>“How will I know when it’s time to get out of bed?”</p> <ul style="list-style-type: none"> <li>• Advise the patient that their best estimate of when 30 min has past is generally good enough, and there is no need to look at the clock for confirmation.</li> </ul>  |

bedtimes and wakeup times, including a tendency to “sleep in” on weekends or after a poor night of sleep. The rationale for maintaining a consistent wakeup time is threefold: (a) Wakeup time is the single most important cue for “setting” the biological clock, (b) wakeup time also regulates exposure to morning light—another powerful cue to set the biological clock and prevent phase delay, and (c) maintaining a consistent wakeup time even after a poor night of sleep increases homeostatic sleep drive for the subsequent night. It is very important for patients to grasp this shift in thinking about their sleep habits—their tendency may have been to try to “catch up” on sleep whenever the opportunity arises, but this reactive style actually perpetuates the problem by reducing both the biological clock’s signaling for sleep and wakefulness, as well as the homeostatic drive for sleep on the subsequent night.



*Rule 3: Do not go to bed unless you are sleepy.* The first key to effectively delivering this recommendation is helping the patient to understand the distinction between sleepiness and fatigue, as it is commonly believed that these two states are synonymous. In fact, we explain to patients that *sleepiness* refers to the actual propensity to fall asleep, whereas *fatigue or tiredness* refers to feelings of weariness or exhaustion, which do not necessarily equate to one's propensity to fall asleep. Indeed, when describing this distinction to insomnia patients, a common patient response is, "Oh, I feel tired all the time, but never sleepy." The rationale for this rule is that by going to bed only when sleepy, you are necessarily increasing homeostatic sleep drive by staying up longer. Finally, we emphasize that "trying" to sleep is not only frustrating, but biologically impossible: Sleep is not a volitional behavior, but a state that the brain switches into when it is ready to do so, based on homeostatic and circadian factors.

Utilizing all available information from the patient's sleep diaries and the clinical interview, the therapist should have a good understanding of when the patient is currently trying to go to bed and the reasons for this typical bedtime. Often, the patient's typical bedtime is based on beliefs about when one "should" be going to bed to achieve some optimal duration of sleep, or the spouse/bed partner's pattern, but has very little connection to the patient's experience sensation of sleepiness.

*Rule 4: Do not stay in bed unless you are asleep.* Using the principle of stimulus control, the therapist helps the patient to recognize that through successive nights of being unable to sleep in bed, the brain develops a learned association between the bed and being awake, rather than being asleep. To break this habit, the recommendation is to get out of bed if awake for > 30 min (by their own estimate). Perhaps not surprisingly, this recommendation is often the most difficult for patients to accept or adhere to. It is often helpful for the therapist to acknowledge that the idea of getting out bed in the middle of the night may seem aversive, but at the same time helping the patient to understand that part of their insomnia is a "learned habit" of staying in bed while not sleeping. Furthermore, staying in bed perpetuates the cycle of wakefulness → frustration → arousal → wakefulness. Thus, breaking the habit involves getting out of bed when not asleep.

In addition, to facilitate successful implementation of stimulus control recommendations, it is critical that the therapist brainstorm with the patient specific activities that he or she can do in the middle of the night if not sleeping. As with each of the recommendations, the activities chosen should be individualized for the patient, based on his or her individual interests or limitations, although the general recommendation is that activities should be distracting, but not overly stimulating, and accomplished in low-light settings to avoid circadian resetting. Work-related activities should be avoided, and we also generally recommend that patient's avoid using the computer, as this can be both stimulating and can provide too much light exposure. (However, these activities can be encouraged in the morning.) Activities that patients choose have included reading, crossword puzzles, listening to audio books, organizing photo albums, or folding laundry. The goal of the recommendation is to provide the patient with sufficient distraction such that he or she is no longer focused on the fact that he or she is not sleeping. The patient should continue the activity until he or she feels sleepy enough to return to bed. If after returning to bed the patient is unable to fall back to sleep, the process repeats. In practice, some clients find that implementing Rules 1 through 3 negate the need for implementing Rule 4.

## Setting the Prescribed Sleep Schedule

Session 1 concludes with an individually tailored “sleep prescription” that includes the patient’s recommended bedtime and wakeup time, activities to engage in prior to going to bed and in the middle of the night if not sleeping, medication timing and dosage if applicable, and scheduling of follow-up phone and in-person sessions. Generally speaking, we find it helpful to start by asking the patient when they think their prescribed wakeup time should be and then working backward to determine bedtime. This often becomes an iterative process because the patient may initially come up with an unrealistic goal for a rise time (e.g., 9:00 a.m.). Having the patient first set the wakeup time, then work backward based on total prescribed time in bed (sleep time + 30 min, but not < 6 hr), allows the patient to self-adjust expectations and make more realistic decisions regarding the sleep schedule, rather than having the therapist dictate a set schedule. In non-working populations, such as retirees, setting the wakeup time can often be challenging because the patient may have fewer external obligations to determine when one starts the day. In such cases, the therapist may need to strategize with the patient activities to perform in the morning as well, to enhance motivation to get out of bed and to set a morning routine, even in the absence of external obligations. The patient is reminded that he or she should get in bed at night “no earlier than” the prescribed bedtime, as the instruction for “not going to bed unless sleepy” supersedes this prescription.

Finally, it is important to remind patients that all treatments, including behavioral ones, may have side effects. For BBTI, a temporary increase in daytime sleepiness is the most commonly reported side effect and to be expected, given the mild sleep deprivation associated with sleep restriction, particularly in conjunction with the other “rules for better sleep.” Therefore, specific directives regarding safety precautions (e.g., in the case of long-distance driving) are also discussed with patients. Regularly assessing the severity of daytime sleepiness via sleep diaries or standardized questionnaires (e.g., Epworth Sleepiness Scale), as well as utilizing the therapist’s judgment of the patient’s particular circumstances, is warranted to protect against adverse events associated with excessive sleepiness.

We have found that directly acknowledging the anticipated and real difficulty in adhering to the newly prescribed sleep–wake schedule is helpful in setting realistic expectations about the course and outcome of BBTI and in enhancing adherence to the new schedule. Specifically, sleepiness and daytime fatigue are two of the main reasons why patients with chronic insomnia extend the amount of time they spend in bed. Acknowledging that following the prescribed sleep–wake schedule will *temporarily* accentuate sleepiness and fatigue, and that these are observable signs that the patient is responding to treatment as expected, is important in helping patients adhere to their new schedule for several consecutive days.

### *Session 2 (Phone Contact)*

A brief follow-up phone contact is scheduled for Session 2. The patient is asked to have their sleep diary in hand during the phone call to facilitate review of the previous week’s data. Although no particular script is followed for the phone sessions, the therapist generally begins by asking general questions about the patient’s sleep and daytime functioning in the past week (e.g., “Did you notice any changes in your sleep in the past week? How would you rate your sleep quality [on a scale from 0–100]? How would you rate your daytime functioning? Did you nap? If so, how many days of the week?”), followed by several questions regarding adherence

to the prescribed sleep schedule and specific sleep problems in the past week (e.g., “Did you find it difficult to follow the schedule? What time did you go to bed? When did you wake up? Did it take you more than 30 minutes to fall asleep on any of the nights? How many? What about waking up in the middle of the night?”). More important, this phone call is used as a brief “check in” to provide support and to problem-solve issues regarding treatment adherence. It generally does not require a night-by-night review of the sleep diaries. Rather, careful review of the patient’s sleep diaries over the 2-week period occurs during the in-person Session 3.

### *Session 3*

Week 3 is an in-person session intended to (a) review progress and address possible difficulties regarding the application of the techniques, (b) monitor and reinforce adherence to treatment recommendations, and (c) provide instructions on how to titrate sleep schedule. Specifically, based on a careful review of the patient’s sleep diaries, if sleep onset latency (SOL) and wake (time) after sleep onset (WASO) are < 30 min on most nights, then the patient is allowed to add 15 min to their total sleep time (either by advancing bedtime or delaying wakeup time). The patient is instructed to maintain this new sleep schedule for the next week. If, on the other hand, SOL or WASO are > 30 min, then the patient is instructed to decrease time in bed by 15 min. The intention, of course, is not to make the patient feel punished, but rather to explain that sometimes there is a trial and error process to determine the optimal sleep schedule. Further restricting time in bed is necessary on a temporary basis to increase sleep drive and improve sleep consolidation. Patients are instructed to follow the algorithm of sleep extension or restriction on a weekly basis throughout the treatment and, if daytime sleepiness persists, beyond treatment discontinuation. Notably, the BBTI instructions for modifying the sleep schedule (Buysse et al., 2011) are intentionally simplified as compared to the standard sleep restriction recommendation to modify the sleep schedule based on an SE of 85% or greater. Rather, the “30/30” rule in BBTI (e.g., increase sleep duration when SOL and WASO are below 30 min or decrease sleep time if SOL or WASO are above 30 min) is based on standard quantitative criteria for insomnia (Lichstein, Durrence, Taylor, Bush, & Riedel, 2003) and is easy for patients to remember and to evaluate without a calculator. Finally, in this session, it is also helpful to reinforce motivation by reminding patients that behavior change is initially difficult, and progress comes with practice.

### *Session 4*

A final follow-up phone session is used to address any difficulties with the treatment, review progress, increase time in bed if sleep remains consolidated and if daytime sleepiness persists, and review relapse-prevention techniques. In particular, the final session is used to review the rules for better sleep, including the instructions for stimulus control and sleep restriction, and to review the instructions for increasing or decreasing time in bed. The critical feature of this last portion is that the patient understands that time in bed should be *decreased* when sleep is poor and can be *increased* when sleep is good—a counterintuitive notion for many. It is helpful to discuss with the patient possible situations or time periods when they may be likely to experience an increase in sleep disturbances, such as during periods of stress at home or at work. Thinking ahead to these situations may allow the patient to develop proactive strategies

for managing stress-related or otherwise transient sleep disturbances, such as reducing time in bed, delaying bedtime, or getting out of bed immediately if not sleeping.

## PRACTICAL GUIDELINES FOR CONDUCTING BBTI IN THE CLINIC

### Contraindications for BBTI

We have been cautious in delivering BBTI to clinical patients or research participants who have a diagnosis of bipolar disorder, as sleep restriction may precipitate manic episodes (Barbini, Bertelli, Colombo, & Smeraldi, 1996; Harvey, 2008). When treating such patients in our clinic, we do so only in close consultation with their other treatment providers (psychiatrist, therapist, or both) and primarily focus on stimulus control and consistent wakeup time recommendations. We also reinforce the importance of regular social rhythms (Frank et al., 1995). Moreover, we advise against a total sleep window < 6 hr. Individuals with unstable or untreated medical or psychiatric conditions are also typically encouraged to seek treatment to stabilize these other conditions prior to initiating BBTI. Due to the sleep restriction component of BBTI, other populations in which BBTI may be contraindicated include patients with seizure disorders, patients with excessive daytime sleepiness, or patients who already demonstrate restricted time in bed (< 6 hr in bed).

### A Note on Medications in the Context of BBTI

Many patients who present for evaluation and treatment of chronic insomnia are taking hypnotic medication. Consistent with our aim of testing the generalizability of treatment effects of BBTI in a “real-life” sample, our clinical trial of BBTI did not exclude patients based on use of sleep medications. Roughly one-third of the participants randomized to BBTI used sleep medications, and subgroup analyses showed no difference in the magnitude or direction of effects of BBTI for those on medications versus those not taking medications (Buysse et al., 2011).

Our clinical strategy with patients who are taking sleep medications (generally benzodiazepine receptor agonists) is not considered to be part of BBTI *per se*, but as an adjunctive strategy to be coordinated with the patient’s prescribing physician. The approach includes three principles. The first principle is to increase the predictability of medication use (i.e., to take medication proactively at the beginning of the night, rather than reactively after frustrated attempts to fall asleep without medication). The second principle is to maximize the efficacy of medication by taking it in conjunction with BBTI recommendations and at an appropriate time. Many patients take sleep medications hours before bedtime when they are not feeling sleepy, under the misconception that the medication will “knock them out.” Educating patients about the homeostatic and circadian processes that control sleep, and the role of medication in assisting (rather than overriding) those processes, is critical. Thus, medication is viewed as a tool to give an extra “push” to sleep drive once the individual is already feeling sleepy. A third principle is to provide general education about how to discontinue medication if and when the patient is ready to do so. BBTI recommendations are reinforced as tools to improve sleep during and after medication discontinuation.

## Summary and Future Directions for BBTI

There is now a solid evidence base to suggest that BBTI and other similar forms of brief, multi-component, behavioral treatments for insomnia are efficacious in both primary insomnia and comorbid insomnia populations. To be sure, the commonalities across these treatments are far greater than their differences, as most rest on the basic principles of sleep restriction and stimulus control. Given our laboratory's particular interest in treating insomnia in older adults, who often have comorbid mental and physical health conditions, and developing a treatment that could be accessible to nurses and other professionals with limited experience in sleep medicine or delivering behavioral therapies, we devised a package of treatment tools in the form of a simple workbook that could easily be administered over a brief period of time across a variety of settings and by a variety of professionals.

Although we have yet to conduct an effectiveness trial of BBTI in the community, in parallel with the clinical trial of BBTI, we have been using BBTI as our primary treatment model in our sleep training clinic, which provides 3- to 6-month clinical rotations for psychiatry residents, clinical psychology interns, sleep fellows, and graduate students with widely varying degrees of previous knowledge/experience in sleep medicine. Overall, we have found that even trainees who have no previous experience in sleep medicine have been able to learn the treatment and deliver it successfully within a relatively short training period (i.e., usually after observing 3–4 treatment sessions). In our training clinic, we offer more flexibility with regard to the nature and timing of sessions (in-person vs. phone sessions), and generally use a phone session for Session 3 only and conclude treatment with an in-person session to review progress and discuss relapse prevention. As opposed to the clinical research trial, which had *a priori* determined clinical outcomes (e.g., response/remission categories), in clinical practice, the determination of whether treatment is a success or failure or if treatment should continue beyond the standard four sessions is, in large part, determined by the patient's subjective experience of improvement, or lack thereof, in conjunction with the therapist's clinical judgment, as well as the review of sleep diaries and standard assessments (e.g., PSQI, ISI, and Epworth Sleepiness Scale). Patients who continue to have disrupted nocturnal sleep or excessive daytime sleepiness, despite improvements in sleep quality and consolidation, may benefit from additional sessions focused on other components of CBTI (e.g., thought restructuring and relaxation training).

Given that the efficacy of BBTI in this format has been demonstrated (Buysse et al., 2011; Germain et al., 2006), our next steps will be to consider other modalities to enhance the widespread dissemination of BBTI, including training nurses in primary care practices and developing Web-based, interactive tools for delivering BBTI to further diminish the barriers to efficacious behavioral treatments for insomnia, and ultimately to reduce the burden of insomnia in the population.

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